

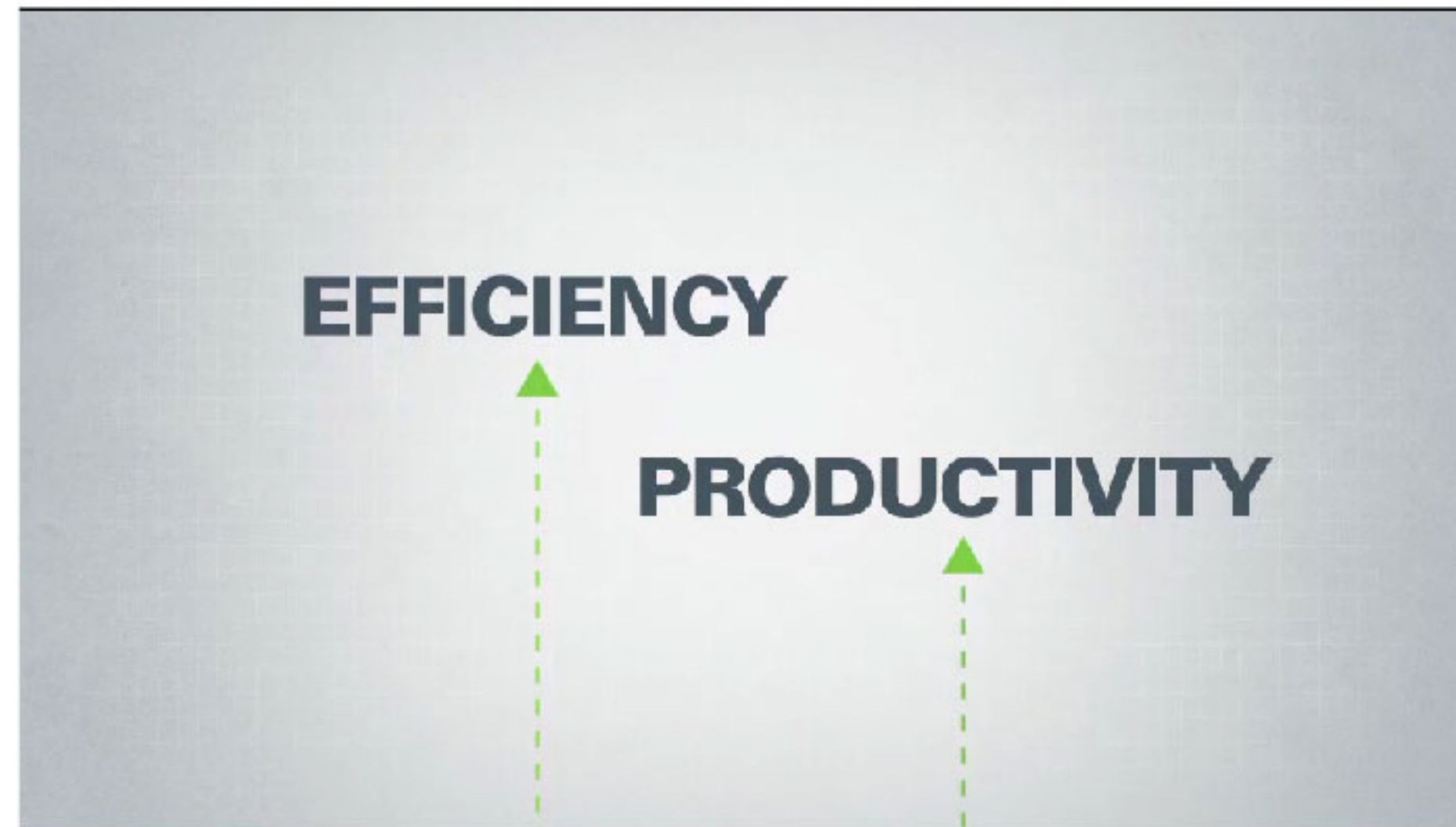
14th Intermodal Africa, Lagos 2015



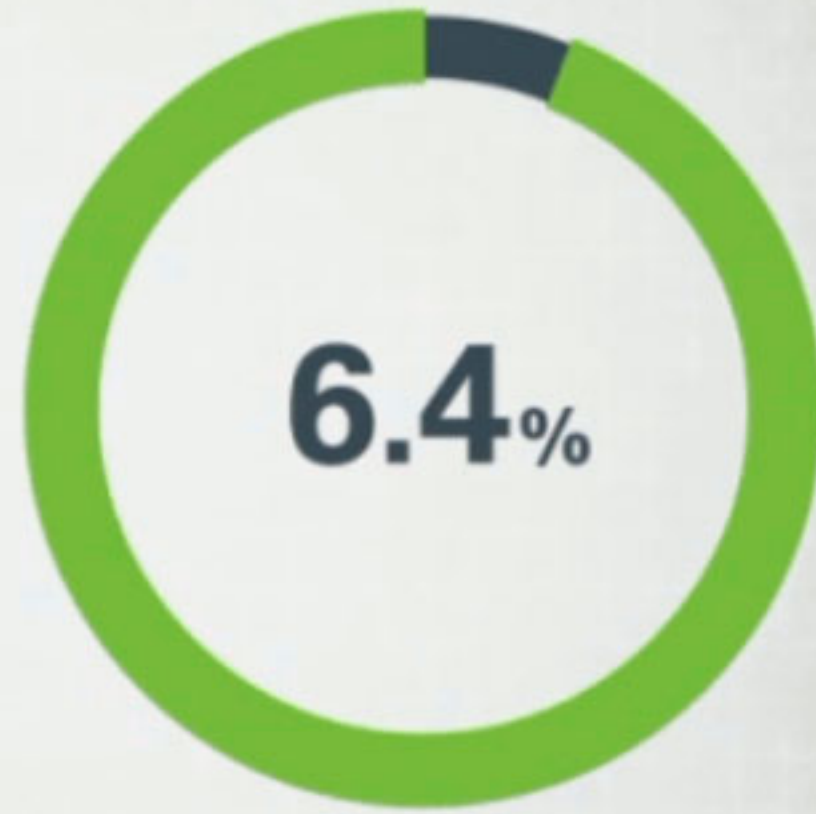
# Automation in Container Terminals



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**GLOBAL  
CONTAINER  
MARKET  
DEMAND  
2016**



**FULLY & SEMI-AUTOMATED  
TERMINALS**



**25  
CURRENT**

**14  
NEW**

**GLOBAL  
CONTAINER  
MARKET  
DEMAND  
20**



**What is the definition  
of Automation?...**

**14  
NEW**

# Automation over the years...


A journey through Automation...




Who remembers these?

T-Cards -1960-70

A journey through Automation...




Mainframe Systems



Ability to create Printed Invoices

What is the definition of Automation?...



First Graphical Planning

What is the definition of Automation?...



Container Inventory via Spreadsheet



A journey through Automation...



Paperless Invoicing

Regional Specific

What is the definition of Automation?...



Computers in the Yard



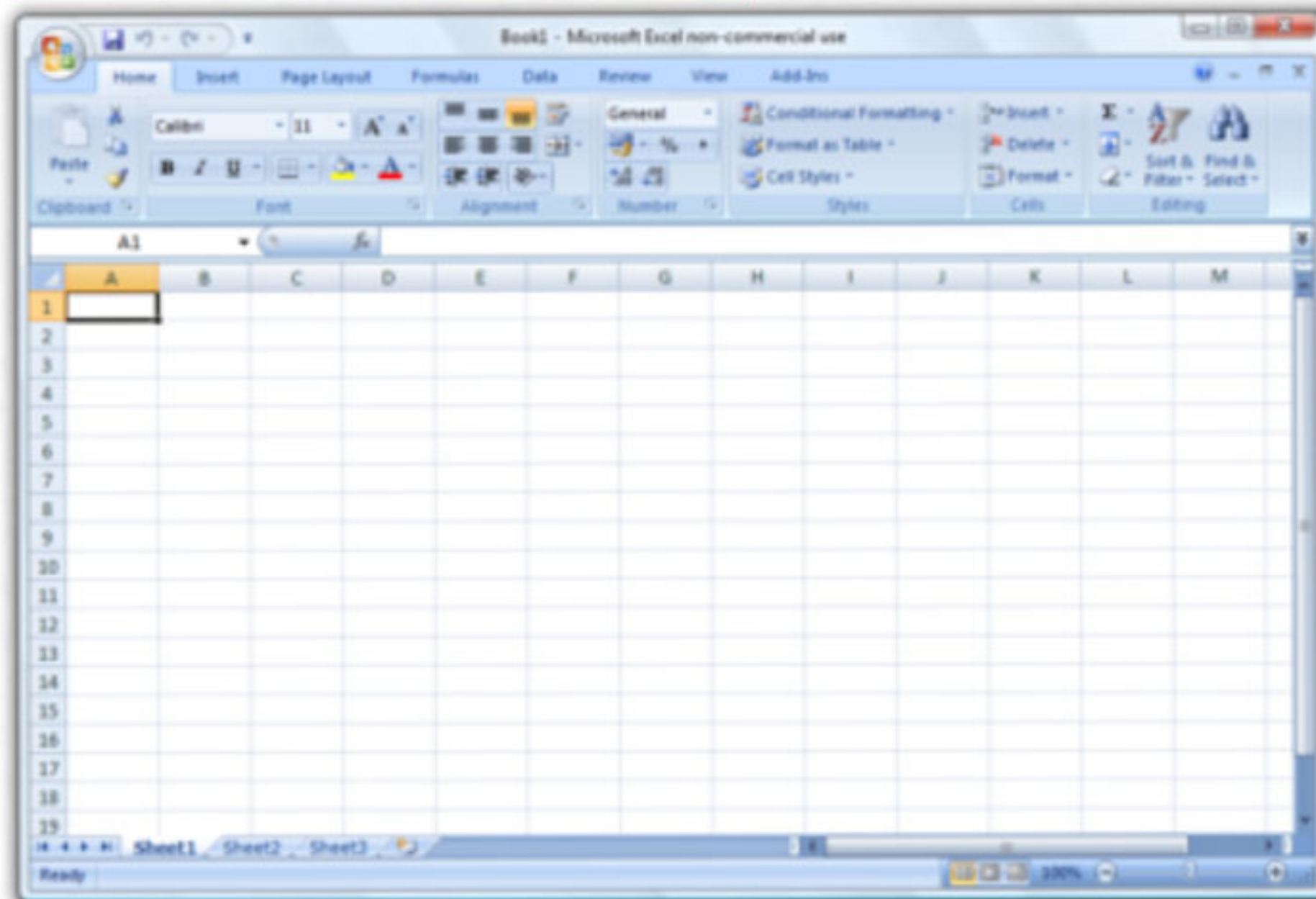
A journey through Automation...



Process Automation

GPS  
RFID  
OCR

*What is the definition of Automation?...*



# Container Inventory via Spreadsheet

Data that can be  
searched

*What is the definition of Automation?...*



# Computers in the Yard

Real-Time Systems



*What is the definition of Automation?...*

## Communication Developing Standards



UN / EDIFACT  
Fax and Email

## Paperless Invoicing

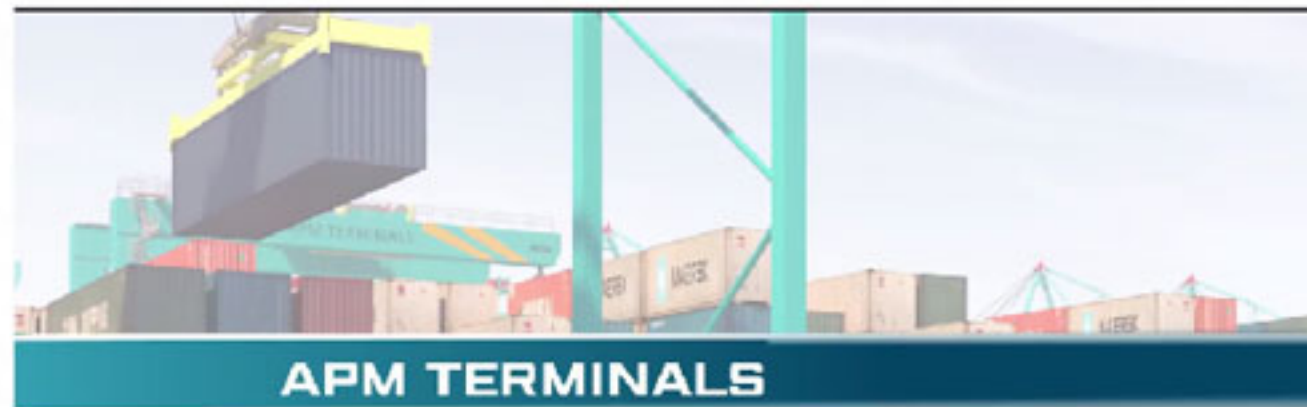


Regional Specific



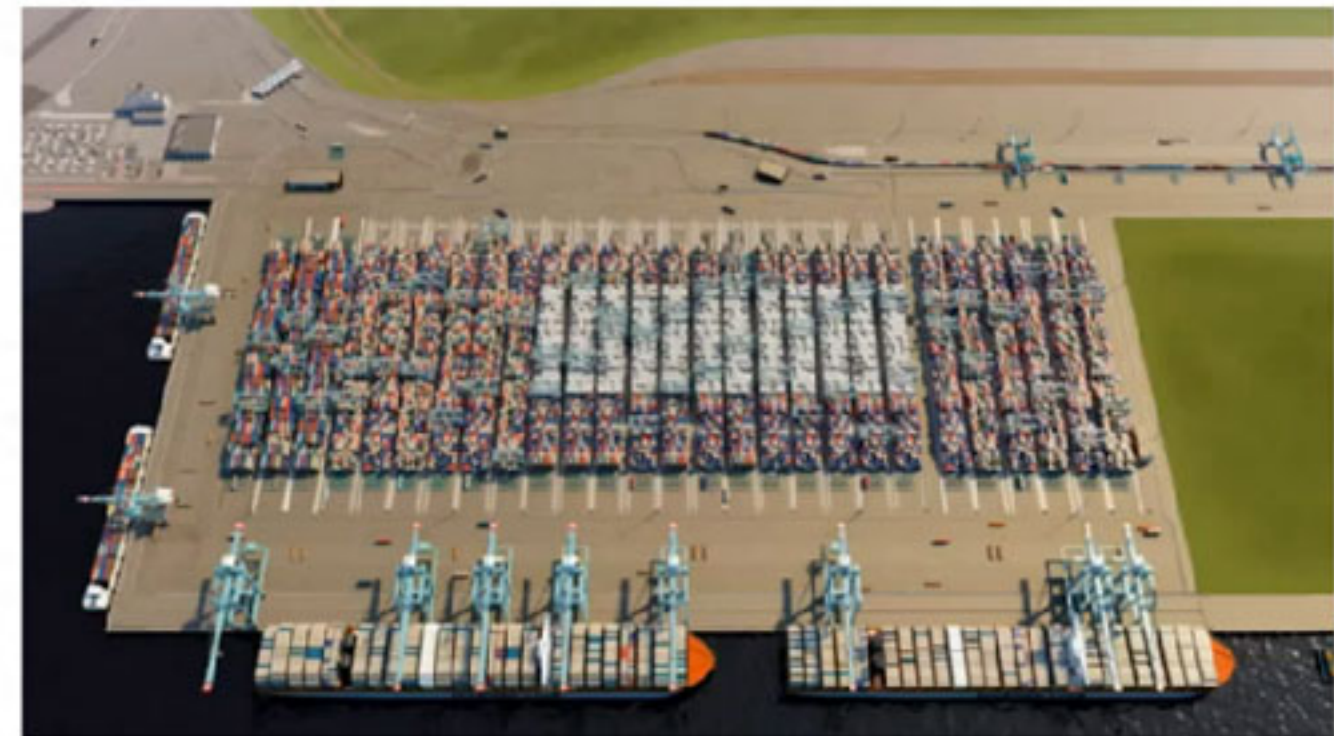
*What is the definition of Automation?...*

## Machine Automation



Equipment moving without  
the direct aid of a person

## Process Automation



GPS, RFID, OCR

# Automation: Why?

~~Reduce Labour~~ - 1st year Return on Investment only

Consistency - Shift Work, Weather, Speed

Yard Density - TEU per Hectare

Safety - Need I say more...

Collection of more data - Opportunities to improve

# Automation: Business Case

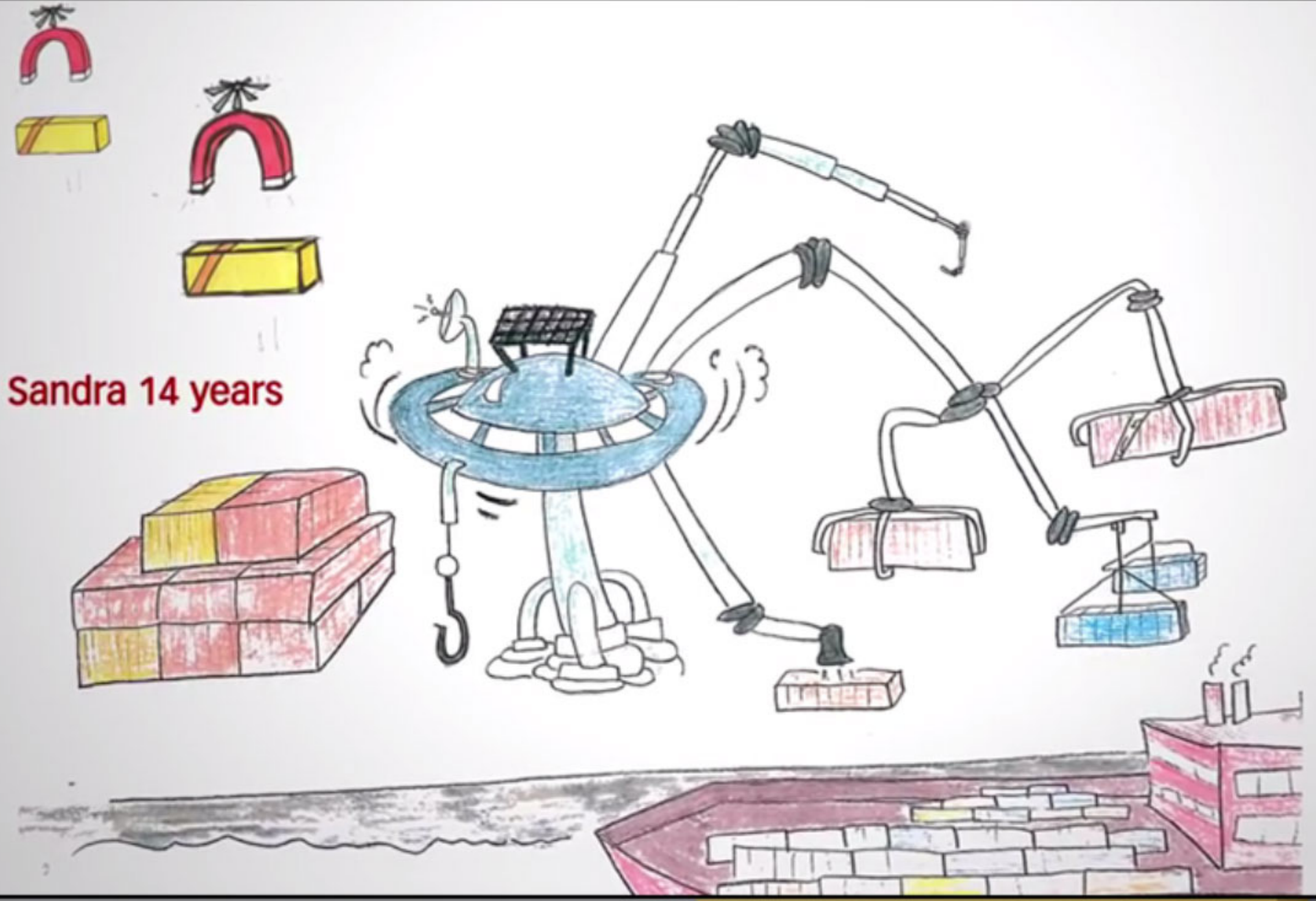
Benchmark Criteria	RTG w/ TT	C-ARMG w/ TT	ASC w/a)SH	ASC w/ L-AGV
<i>Yard Density</i>	730 TEUs/Ha	900 TEUs/Ha	820 TEUs/Ha	770 TEUs/Ha
<i>Service Level Waterside</i>	🟢	🟢	🟢	🟡
<i>Service Level Landside</i>	🟡	🟡	🟡	🟡
<i>Safety</i>	🔴	🔴	🟢	🟢
<i>OPEX (M \$)</i>	34-62	29-50	27-38	25-32
<i>CAPEX (M \$)</i>	151	164	195	201
<i>Energy (L/Move)</i>	6.0	2.5	2.5	1.2

*Note: Calculations for 1M TEUs Terminal. Source TBA.*



**Amazon believes**

**Automation  
Tomorrow....**



Sandra 14 years

navis  
N4

Lifting Global Trade.

APM TERMINALS

APAPA

Lifting Global Trade.

APM TERMINALS

E



## Navis in Africa

- South Africa
- Morocco
- Egypt
- Djibouti
- Liberia
- Angola
- Namibia
- Senegal
- Ghana
- Benin

Contact Me

Today --> Tomorrow



Over the years

The Business Case

In the Region

14th Intermodal Africa, Lagos 2015

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Thank you...



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